

IN THE CLAIMS

1. - 19. (canceled)

20. (original) An apparatus for use with a heat exchanger, the apparatus comprising:

a coolant recovery section for recovering a coolant gas containing contaminants from the heat exchanger;

an analysis section operable to monitor a condition of the recovered coolant gas; and

a coolant gas blending section in operational association with the coolant gas recovery section and the analysis section, the coolant gas blending section operable to produce, based on the condition of the recovered coolant gas, a gaseous coolant blend having a predetermined contaminant concentration from a virgin coolant gas and a reclaimed portion of the recovered coolant gas.

21. (original) The apparatus of Claim 20, wherein the coolant gas recovery section comprises a pump operable to produce both a negative pressure and a positive pressure within the apparatus.

22. (original) The apparatus of Claim 20, wherein the coolant gas recovery section comprises an orifice capable of reducing, within the heat exchanger, the effects of pressure differentials created by the pump.

23. (original) The apparatus of Claim 20, wherein the coolant gas blending section comprises a means for controlling flow.

24. (original) The apparatus of Claim 23, wherein the means for controlling flow is selected from the group consisting of a first and second flow controller, a first and second mass flow controller, and a first and second valve.

25. (original) The apparatus of Claim 20, wherein the virgin coolant gas contains less than about 0.005 percent contaminants by volume of the virgin coolant gas.

26. (original) The apparatus of Claim 20, wherein the predetermined concentration of the contaminants is less than about 5 percent contaminants by volume of the gaseous coolant blend.

27. (original) The apparatus of Claim 20, wherein the condition is selected from the group consisting of an amount of moisture, a concentration of oxygen, and a concentration of an inert gas in the recovered coolant gas.

28. (original) The apparatus of Claim 20, wherein the analysis section includes an analyzer selected from the group consisting of an oxygen analyzer, an inert gas analyzer, and a moisture analyzer.

29. (original) The apparatus of Claim 20, wherein the apparatus further comprises a by-pass section for providing a gas seal to the heat exchanger.

30. (original) The apparatus of Claim 29, wherein the by-pass section utilizes at least a portion of the recovered coolant gas to provide the gas seal.

31. (original) An apparatus for recovering a coolant gas containing contaminants from a heat exchanger and recycling at least a portion of the recovered coolant gas, the apparatus comprising:

a pump operable to recover the coolant gas from the heat exchanger and to transport the recovered coolant gas through the apparatus;

an analyzer operable to monitor a condition of the recovered coolant gas;

a first mass flow controller operable to reclaim a portion of the recovered coolant gas by delivering the reclaimed portion of the recovered coolant gas to a mixing point;

a second mass flow controller operable to provide a virgin coolant gas to the mixing point;

a third mass flow controller operable to maintain a flow of the recovered coolant gas through the apparatus;

wherein the apparatus is operable to produce, based on the condition of the recovered coolant gas, a gaseous coolant blend from the virgin coolant gas and the reclaimed portion of the recovered coolant gas such that the gaseous coolant blend has a predetermined contaminant concentration when the gaseous coolant blend is introduced into the heat exchanger.

32. (original) The apparatus of Claim 31, wherein a combined flow of recovered coolant gas through the first mass flow controller, the third mass flow controller, and the analyzer determine a pressure generated by the pump for transporting the recovered coolant gas.

33. (original) The apparatus of Claim 31, wherein a flow of the recovered coolant gas passing through the analyzer is constant.

34. (original) The apparatus of Claim 31, wherein the flow of the recovered coolant gas through the third mass flow controller is restricted while the flow of the recovered coolant gas through the first mass flow controller is simultaneously increased.

35. (original) The apparatus of Claim 31, wherein the apparatus further comprises a control system associated with the analyzer and capable of actuating the first mass flow controller, the second mass flow controller, and the third mass flow controller based on the condition of the recovered coolant gas.

36. (original) The apparatus of Claim 31, wherein the apparatus further comprises a control system associated with the analyzer and capable of actuating the first mass flow controller and the second mass flow controller to produce the gaseous coolant blend at the predetermined concentration.

37. (original) The apparatus of Claim 31, wherein the apparatus further comprises an orifice for de-coupling the pump and the heat exchanger and reducing, within the heat exchanger, pressure differential effects produced by the pump.

38. (original) A coolant gas recovery system comprising:

a coolant gas for cooling a hot fiber;

a heat exchanger including:

a fiber inlet adapted to receive the hot fiber into the heat exchanger;

a fiber outlet adapted to expel the hot fiber from the heat exchanger;

a passageway extending between the fiber inlet and fiber outlet, the passageway adapted to pass therethrough the hot fiber;

one or more coolant gas inlets for introducing a coolant gas into the passageway; and

one or more coolant gas outlets for removing the coolant gas from the passageway;

a pump for pumping and drawing the coolant gas through the system;

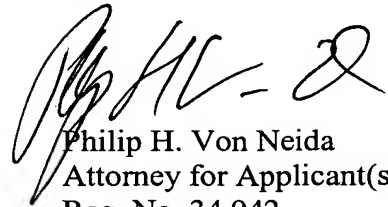
an analyzer for monitoring an impurity concentration in the coolant gas;

a first mass flow controller and a second mass flow controller for controlling the impurity concentration in the coolant gas based on the monitored impurity concentration; and

a third mass flow controller for providing a seal to the heat exchanger using the coolant gas and for maintaining a constant flow of the coolant gas to ensure continuous operation of the pump.

39. (original) The system of Claim 38, wherein the coolant gas is selected from the group consisting of helium, nitrogen, a helium-nitrogen mixture, and a helium-air mixture.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'PHV - 2', is written over the printed name and title of the attorney.

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